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1

SEQUENCE LISTING

<110> TSCHOPP, JURG

<120> APRIL-A NOVEL PROTEIN WITH GROWTH EFFECTS

<130> A049 US

<140> 09/520,489

<141> 2000-03-08

<150> PCT/US98/19191

<151> 1998-09-11

<150> 60/079,384

<151> 1998-03-26

<150> 60/058,786

<151> 1997-09-12

<160> 16

<170> PatentIn Ver. 2.1

<210> 1

<211> 1346

<212> DNA

<213> Homo sapiens

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<211> 250

EXPRESS MAIL  
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&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 2

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 Asn Met Gly Gly Pro Val Arg Glu Pro Ala Leu Ser Val Ala Leu Trp  
 20 25 30  
 Leu Ser Trp Gly Ala Ala Leu Gly Ala Val Ala Cys Ala Met Ala Leu  
 35 40 45  
 Leu Thr Gln Gln Thr Glu Leu Gln Ser Leu Arg Arg Glu Val Ser Arg  
 50 55 60  
 Leu Gln Gly Thr Gly Gly Pro Ser Gln Asn Gly Glu Gly Tyr Pro Trp  
 65 70 75 80  
 Gln Ser Leu Pro Glu Gln Ser Ser Asp Ala Leu Glu Ala Trp Glu Asn  
 85 90 95  
 Gly Glu Arg Ser Arg Lys Arg Arg Ala Val Leu Thr Gln Lys Gln Lys  
 100 105 110  
 Lys Gln His Ser Val Leu His Leu Val Pro Ile Asn Ala Thr Ser Lys  
 115 120 125  
 Asp Asp Ser Asp Val Thr Glu Val Met Trp Gln Pro Ala Leu Arg Arg  
 130 135 140  
 Gly Arg Gly Leu Gln Ala Gln Gly Tyr Gly Val Arg Ile Gln Asp Ala  
 145 150 155 160  
 Gly Val Tyr Leu Leu Tyr Ser Gln Val Leu Phe Gln Asp Val Thr Phe  
 165 170 175  
 Thr Met Gly Gln Val Val Ser Arg Glu Gly Gln Gly Arg Gln Glu Thr  
 180 185 190  
 Leu Phe Arg Cys Ile Arg Ser Met Pro Ser His Pro Asp Arg Ala Tyr  
 195 200 205  
 Asn Ser Cys Tyr Ser Ala Gly Val Phe His Leu His Gln Gly Asp Ile  
 210 215 220  
 Leu Ser Val Ile Ile Pro Arg Ala Arg Ala Lys Leu Asn Leu Ser Pro  
 225 230 235 240  
 His Gly Thr Phe Leu Gly Phe Val Lys Leu  
 245 250

&lt;210&gt; 3

&lt;211&gt; 917

&lt;212&gt; DNA

&lt;213&gt; Mus sp.

&lt;400&gt; 3

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&lt;210&gt; 4

&lt;211&gt; 232

&lt;212&gt; PRT

&lt;213&gt; Mus sp.

&lt;400&gt; 4

E4

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          20              25              30

Ile Gln Gln Thr Glu Leu Gln Ser Leu Arg Arg Glu Val Ser Arg Leu
          35              40              45

Gln Arg Ser Gly Gly Pro Ser Gln Lys Gln Gly Glu Arg Pro Trp Gln
  50              55              60

Ser Leu Trp Glu Gln Ser Pro Asp Val Leu Glu Ala Trp Lys Asp Gly
  65              70              75              80

Ala Lys Ser Arg Arg Arg Arg Ala Val Leu Thr Gln Lys His Lys Lys
          85              90              95

Lys His Ser Val Leu His Leu Val Pro Val Asn Ile Thr Ser Lys Asp
          100              105              110

Ser Asp Val Thr Glu Val Met Trp Gln Pro Val Leu Arg Arg Gly Arg
          115              120              125

Gly Pro Gly Gly Gln Gly Asp Ile Val Arg Val Trp Asp Thr Gly Ile
          130              135              140

Tyr Leu Leu Tyr Ser Gln Val Leu Phe His Asp Val Thr Phe Thr Met
          145              150              155              160

Gly Gln Val Val Ser Arg Glu Gly Gln Gly Arg Arg Glu Thr Leu Phe
          165              170              175

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Arg Cys Ile Arg Ser Met Pro Ser Asp Pro Asp Arg Ala Tyr Asn Ser  
180 185 190

Cys Tyr Ser Ala Gly Val Phe His Leu His Gln Gly Asp Ile Ile Thr  
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Val Lys Ile Pro Arg Ala Asn Ala Lys Leu Ser Leu Ser Pro His Gly  
210 215 220

Thr Phe Leu Gly Phe Val Lys Leu  
225 230

<210> 5

<211> 233

<212> PRT

<213> Homo sapiens

<400> 5

Met Gly Gly Pro Val Arg Glu Pro Ala Leu Ser Val Ala Leu Trp Leu  
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20 25 30

Thr Gln Gln Thr Glu Leu Gln Ser Leu Arg Arg Glu Val Ser Arg Leu  
35 40 45

Gln Gly Thr Gly Gly Pro Ser Gln Asn Gly Glu Gly Tyr Pro Trp Gln  
50 55 60

Ser Leu Pro Glu Gln Ser Ser Asp Ala Leu Glu Ala Trp Glu Asn Gly  
65 70 75 80

Glu Arg Ser Arg Lys Arg Arg Ala Val Leu Thr Gln Lys Gln Lys Lys  
85 90 95

Gln His Ser Val Leu His Leu Val Pro Ile Asn Ala Thr Ser Lys Asp  
100 105 110

Asp Ser Asp Val Thr Glu Val Met Trp Gln Pro Ala Leu Arg Arg Gly  
115 120 125

Arg Gly Leu Gln Ala Gln Gly Tyr Gly Val Arg Ile Gln Asp Ala Gly  
130 135 140

Val Tyr Leu Leu Tyr Ser Gln Val Leu Phe Gln Asp Val Thr Phe Thr  
145 150 155 160

Met Gly Gln Val Val Ser Arg Glu Gly Gln Gly Arg Gln Glu Thr Leu  
165 170 175

Phe Arg Cys Ile Arg Ser Met Pro Ser His Pro Asp Arg Ala Tyr Asn  
180 185 190

Ser Cys Tyr Ser Ala Gly Val Phe His Leu His Gln Gly Asp Ile Leu  
195 200 205

54  
ad

Ser Val Ile Ile Pro Arg Ala Arg Ala Lys Leu Asn Leu Ser Pro His  
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Gly Thr Phe Leu Gly Phe Val Lys Leu  
 225 230

<210> 6  
 <211> 134  
 <212> PRT  
 <213> Homo sapiens

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Val Thr Glu Val Met Trp Gln Pro Ala Leu Arg Arg Gly Arg Gly Leu  
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Gln Ala Gln Gly Tyr Gly Val Arg Ile Gln Asp Ala Gly Val Tyr Leu  
 35 40 45

Leu Tyr Ser Gln Val Leu Phe Gln Asp Val Thr Phe Thr Met Gly Gln  
 50 55 60

Val Val Ser Arg Glu Gly Gln Gly Arg Gln Glu Thr Leu Phe Arg Cys  
 65 70 75 80

Ile Arg Ser Met Pro Ser His Pro Asp Arg Ala Tyr Asn Ser Cys Tyr  
 85 90 95

Ser Ala Gly Val Phe His Leu His Gln Gly Asp Ile Leu Ser Val Ile  
 100 105 110

Ile Pro Arg Ala Arg Ala Lys Leu Asn Leu Ser Pro His Gly Thr Phe  
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Leu Gly Phe Val Lys Leu  
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<210> 7  
 <211> 145  
 <212> PRT  
 <213> Homo sapiens

<400> 7  
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Leu Asn Arg Arg Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg  
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Asp Asn Gln Leu Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser  
 35 40 45

Gln Val Leu Phe Lys Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu  
 50 55 60

E4  
 W

Thr His Thr Ile Ser Arg Ile Ala Val Ser Tyr Gln Thr Lys Val Asn  
65 70 75 80

Leu Leu Ser Ala Ile Lys Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly  
85 90 95

Ala Glu Ala Lys Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe  
100 105 110

Gln Leu Glu Lys Gly Asp Arg Leu Ser Ala Glu Ile Asn Arg Pro Asp  
115 120 125

Tyr Leu Asp Phe Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala  
130 135 140

Leu  
145

<210> 8

<211> 142

<212> PRT

<213> Homo sapiens

<400> 8

Ala Ala His Leu Ile Gly Asp Pro Ser Lys Gln Asn Ser Leu Leu Trp  
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Arg Ala Asn Thr Asp Arg Ala Phe Leu Gln Asp Gly Phe Ser Leu Ser  
20 25 30

Asn Asn Ser Leu Leu Val Pro Thr Ser Gly Ile Tyr Phe Val Tyr Ser  
35 40 45

Gln Val Val Phe Ser Gly Lys Ala Tyr Ser Pro Lys Ala Thr Ser Ser  
50 55 60

Pro Leu Tyr Leu Ala His Glu Val Gln Leu Phe Ser Ser Gln Tyr Pro  
65 70 75 80

Phe His Val Pro Leu Leu Ser Ser Gln Lys Met Val Tyr Pro Gly Leu  
85 90 95

Gln Glu Pro Trp Leu His Ser Met Tyr His Gly Ala Ala Phe Gln Leu  
100 105 110

Thr Gln Gly Asp Gln Leu Ser Thr His Thr Asp Gly Ile Pro His Leu  
115 120 125

Val Leu Ser Pro Ser Thr Val Phe Phe Gly Ala Phe Ala Leu  
130 135 140

<210> 9

<211> 136

<212> PRT

<213> Homo sapiens

&lt;400&gt; 9

Val Ala His Leu Thr Gly Lys Ser Asn Ser Arg Ser Met Pro Leu Glu  
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 Trp Glu Asp Thr Tyr Gly Ile Val Leu Leu Ser Gly Val Lys Tyr Lys  
 20 25 30  
 Lys Gly Gly Leu Val Ile Asn Glu Thr Gly Leu Tyr Phe Val Tyr Ser  
 35 40 45  
 Lys Val Tyr Phe Arg Gly Gln Ser Cys Asn Asn Leu Pro Leu Ser His  
 50 55 60  
 Lys Val Tyr Met Arg Asn Ser Lys Tyr Pro Gln Asp Leu Val Met Met  
 65 70 75 80  
 Glu Gly Lys Met Met Ser Tyr Cys Thr Thr Gly Gln Met Trp Ala Arg  
 85 90 95  
 Ser Ser Tyr Leu Gly Ala Val Phe Asn Leu Thr Ser Ala Asp His Leu  
 100 105 110  
 Tyr Val Asn Val Ser Glu Leu Ser Leu Val Asn Phe Glu Glu Ser Gln  
 115 120 125  
 Thr Phe Phe Gly Leu Tyr Lys Leu  
 130 135

&lt;210&gt; 10

&lt;211&gt; 158

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 10

Ala Ala His Ile Thr Gly Thr Arg Gly Arg Ser Asn Thr Leu Ser Ser  
 1 5 10 15  
 Pro Asn Ser Lys Asn Glu Lys Ala Leu Gly Arg Lys Ile Asn Ser Trp  
 20 25 30  
 Glu Ser Ser Arg Ser Gly His Ser Phe Leu Ser Asn Leu His Leu Arg  
 35 40 45  
 Asn Gly Glu Leu Val Ile His Glu Lys Gly Phe Tyr Tyr Ile Tyr Ser  
 50 55 60  
 Gln Thr Tyr Phe Arg Phe Gln Glu Glu Ile Lys Glu Asn Thr Lys Asn  
 65 70 75 80  
 Asp Lys Gln Met Val Gln Tyr Ile Tyr Lys Tyr Thr Ser Tyr Pro Asp  
 85 90 95  
 Pro Ile Leu Leu Met Lys Ser Ala Arg Asn Ser Cys Trp Ser Lys Asp  
 100 105 110

Ala Glu Tyr Gly Leu Tyr Ser Ile Tyr Gln Gly Gly Ile Phe Glu Leu  
115 120 125

Lys Glu Asn Asp Arg Ile Phe Val Ser Val Thr Asn Glu His Leu Ile  
130 135 140

Asp Met Asp His Glu Ala Ser Phe Phe Gly Ala Phe Leu Val  
145 150 155

<210> 11

<211> 141

<212> PRT

<213> Homo sapiens

<400> 11

Ala Ala His Tyr Glu Val His Pro Arg Pro Gly Gln Asp Gly Ala Gln  
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Ala Gly Val Asp Gly Thr Val Ser Gly Trp Glu Lys Ala Arg Ile Asn  
20 25 30

Ser Ser Ser Pro Leu Arg Tyr Asn Arg Gln Ile Gly Glu Phe Ile Val  
35 40 45

Thr Arg Ala Gly Leu Tyr Tyr Leu Tyr Cys Gln Val His Phe Asp Glu  
50 55 60

Gly Lys Ala Val Tyr Leu Lys Leu Asp Leu Leu Val Asp Gly Val Leu  
65 70 75 80

Ala Leu Arg Cys Leu Glu Glu Phe Ser Ala Thr Ala Ala Ser Ser Leu  
85 90 95

Gly Pro Gln Leu Arg Leu Cys Gln Val Ser Gly Leu Leu Ala Leu Arg  
100 105 110

Pro Gly Ser Ser Leu Arg Ile Arg Thr Leu Pro Trp Ala His Leu Lys  
115 120 125

Ala Ala Pro Phe Leu Thr Tyr Phe Gly Leu Phe Gln Val  
130 135 140

<210> 12

<211> 149

<212> PRT

<213> Homo sapiens

<400> 12

Phe Ala His Leu Thr Ile Asn Ala Thr Asp Ile Pro Ser Gly Ser His  
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Lys Val Ser Leu Ser Ser Trp Tyr His Asp Arg Gly Trp Gly Lys Ile  
20 25 30

Ser Asn Met Thr Phe Ser Asn Gly Lys Leu Ile Val Asn Gln Asp Gly  
35 40 45

94



Phe Tyr Tyr Leu Tyr Ala Asn Ile Cys Phe Arg His His Glu Thr Ser  
 50 55 60  
 Gly Asp Leu Ala Thr Glu Tyr Leu Gln Leu Met Val Tyr Val Thr Lys  
 65 70 75 80  
 Thr Ser Ile Lys Ile Pro Ser Ser His Thr Leu Met Lys Gly Gly Ser  
 85 90 95  
 Thr Lys Tyr Trp Ser Gly Asn Ser Glu Phe His Phe Tyr Ser Ile Asn  
 100 105 110  
 Val Gly Gly Phe Phe Lys Leu Arg Ser Gly Glu Glu Ile Ser Ile Glu  
 115 120 125  
 Val Ser Asn Pro Ser Leu Leu Asp Pro Asp Gln Asp Ala Thr Tyr Phe  
 130 135 140  
 Gly Ala Phe Lys Val  
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<210> 13  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

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22

<210> 14  
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<220>  
 <223> Description of Artificial Sequence: Primer

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22

<210> 15  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

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<210> 16  
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<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

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tcacagtttc acaaacccca gg

247

